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ENTOMOLOGICAL NEWS

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A Remarkable New Genus and Species of Isometopid from Panama (Hemiptera, Isometopidae)

By JOSÉ C. M. CARVALHO, Museu Nacional, Rio de Janeiro, and REECE I. SAILER,* Entomology Research Branch, U. S. D. A., Washington, D. C.

The authors have encountered a remarkable bug among samples of insects collected in light traps in Panama by F. S. Blanton. This bug belongs to the family Isometopidae, which can be readily distinguished from the related family Miridae by the presence of at least two ocelli. The specimen which is described here as a new genus and species has four ocelli. Since no Heteroptera are known to have more than two ocelli and no normal insect of any order has more than three,* the unusual character of this specimen is readily apparent. The insect is small, being scarcely more than 1.5 mm. long, and the ocelli are not readily seen. However, when viewed under proper light and magnified at 200 diameters, their external appearance is that of ordinary ocelli. Only with the discovery of additional specimens will it be possible to determine with certainty whether this specimen is a freak or whether it is a representative example of the species. In any event, it can be described as a new genus and new species on the basis of characters other than the ocelli.

The new genus is placed in the tribe Isometopini, which is so far represented in the neotropical region by two genera described by the senior author in 1947 (Rev. Brasil. Biol. 7 (2) : 255).

* Except the males of some Coccidae. In these coccids, however, the four large "ocelli" are not true ocelli in the morphological sense, but correspond to the compound eyes.—ED.

ISOMETOCORIS n. gen.

Isometopidae, Isometopini, division Myommaria. General shape of a very small Phylini (Miridae) with spotted dorsum, large eyes and thickened antennae.

Head. Overlapping the anterior margin of pronotum, very short, about seven times as wide as long on median line; vertex obtusely emarginate posteriorly, frons broadly rounded in front; eyes slightly protuberant, each occupying the whole side of head, each partially encircling the antennal socket when seen from side; ocelli present, apparently in number four (figs. 1 and 2), distance between frontal pair about half that separating posterior pair, the latter near hind margin of vertex and distant from eyes by a space about twice their own diameter. Rostrum very long, almost reaching apex of abdomen, with first segment thickened, attaining base of head, third segment shorter than the others.

Antennae. Inserted in the ventral anterior angle of the eyes when seen from side; first segment surpassing apex of clypeus, very short; second segment about four times as long as first, incrassate, with numerous hairs about half as long as width of segment, these showing a flattened appearance when seen with different proper focus and strong light; third and fourth equal in dimension (fig. 4), pilose.

Pronotum. Very short, about three times as wide as long, disc smooth, flat, concave before humeral angles, lateral margins curved towards the head, hind margin slightly bi-concave; collar absent; mesoscutum broadly exposed, setose; scutellum moderately convex, with blunt apex.

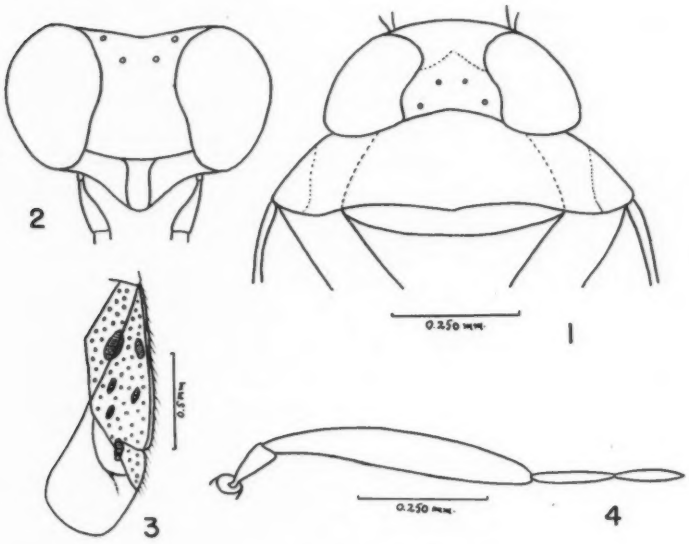
Hemelytra. Smooth, erectly pilose, with parallel margins, without apparent veins, embolium linear, somewhat reflexed, cuneus a little longer than wide at base; membrane rugulose, uniareolate, with a spurious vein arising at the posterior angle of areola (fig. 3).

Underside with peritreme raised and circular in shape. Legs saltatorial, almost devoid of pubescence, tibiae with short setae about as long as width of tibiae and shorter pubescence, tarsi

very slender with segments of approximately equal length, claws simple.

Type of genus: Isometocoris blantoni n. sp.

This genus differs from all other genera of Isometopini by the absence of lateral carina of pronotum, second antennal seg-



Isometocoris blantoni n. gen., n. sp.

Fig. 1. Head and pronotum seen from above. Fig. 2. Head seen from front. Fig. 3. Hemelytra with color areas marked. Fig. 4. Antenna showing relative length of segments.

ment of male distinctly incrassated, veins of membrane each with a spurious vein, shape of pronotum and presence of four ocelli. In McAtee and Malloch's key (Stylops I (3): 62, 1932) it will run to the couplet which keys out *Lidopus* Gibson, 1917, and *Wetmorea* McAtee and Malloch, 1924, but differs from these genera by the above-mentioned characters.

Isometocoris blantoni n. sp. (Figs. 1–4)

Characterized by its color, size, and structure of antennae.

Male: Length 1.57 mm., width 0.71 mm. *Head:* length 0.07 mm., width 0.49 mm., vertex 0.18 mm. *Antennae:* segment I, length 0.10 mm.; II, 0.46 mm.; III, 0.21 mm.; IV, 0.21 mm. *Pronotum:* length 0.21 mm., width at base 0.60 mm. *Rostrum:* length 0.64 mm., segment I, length 0.14 mm.; II, 0.21 mm.; III, 0.10 mm.; IV, 0.17 mm.

Color: General color yellowish with reddish and brown spots; antenna yellowish except for apex of first and apical two-fifths of second segments which are reddish, eyes reddish brown, head with lower portion suffused with red, with a yellow area dorsally; pronotum brown, mottled with yellow; hemelytra yellow with numerous fuscous spots each of which bears a seta, a large yellowish red spot on middle of clavus joining suture, corium with three smaller yellowish red spots on apical portion and one deep red to dark spot on basal third touching embolium, apex of the latter deep red, each of the angles of cuneus bearing a red spot, that of the internal angle largest, surface with setigerous dark red spots, membrane infumate; apex of clavus red; underside of body yellow with thoracic tergites and genital segment suffused with red; femora infumate with apices yellow, hind tibiae generally pale but with some reddish spots on basal half of each.

Morphological characters as given for genus.

Female unknown.

Holotype: Male, Pedregoso, REPUBLIC OF PANAMA, October 28, 1953, F. S. Blanton (in light trap), in the Collection of the United States National Museum, No. 61950.

This species is named in honor of Lt. Col. F. S. Blanton, whose work as entomologist for the U. S. Army's Caribbean Command has resulted in important additions to the insect collections of the U. S. National Museum.

Larva and Pupa of Thrypticus fraterculus (Wheeler) with New Original notes on the Habits of the Family Dolichopodidae. (Diptera)

By Charles T. Greene, College Park, Maryland

The Dolichopodidae is a large and interesting family of beautiful flies. The males have rather distinctive characters but the females are quite difficult to identify unless you have the males associated with them.

Their known life histories are few and quite different in the different genera.

The larvae of *Thrypticus* are miners in plant tissue which is very unusual for this genus and family. (Johannsen and Crosby 1913.)

The larva of *Medetera aldrichii* Wheeler is a predator and sometimes a scavenger on the larvae of *Scolytidae* in the west.

Larvae of *Hydrophorus agalmae* Wheeler are aquatic in fresh water. (Greene 1923.)

Hypocharassus pruinosus (Wheeler): a pupa of this species was found in seaweed on the beach in Florida.

Larvae of *Dolichopus* spp. have been found in damp vegetable mould. (Brauer 1883.)

Larvae of *Aphrosylus* sp. in tufts of algae on rocks along seashore. (Wheeler 1897.)

In checking all the descriptions of the species in the genus *Thrypticus* there was only one case where the female genitalia were mentioned. It said they were "small and yellow."

The females of two other species were dissected; they are equipped to puncture leaf tissue. Their larvae are unknown. See Figs. 4 and 5.

Some time after receiving the specimens of *T. fraterculus* I received two lots of larvae which were similar to *fraterculus* but both were different species. These were miners in aquatic grass causing a small blotch or blister mine.

One lot was collected in Louisiana and the other from California.

Thrypticus fraterculus (Wheeler)

Larva. White, long, slender and cylindrical. 11 segments in addition to the head. Segments 1–4 and the last one shorter than the others. Head rather small, broad and partly retractile. The front of the head with a robust, conical, black, horn-like projection above. Anterior spiracle small; with a circular base, height one half the basal diameter; in the centre is a small, chitinous, pale amber colored tubercle. Last segment tapering toward its apex. Near the apex, on the upper surface is a series of small, black spines. On the dorso-central surface of this segment are located the posterior spiracles. Each spiracle has 3 small, elliptical areas, in a triangular style with a small round button; these are all the same color as the segment.

Larva—10 mm. long and .6 mm. in diameter.

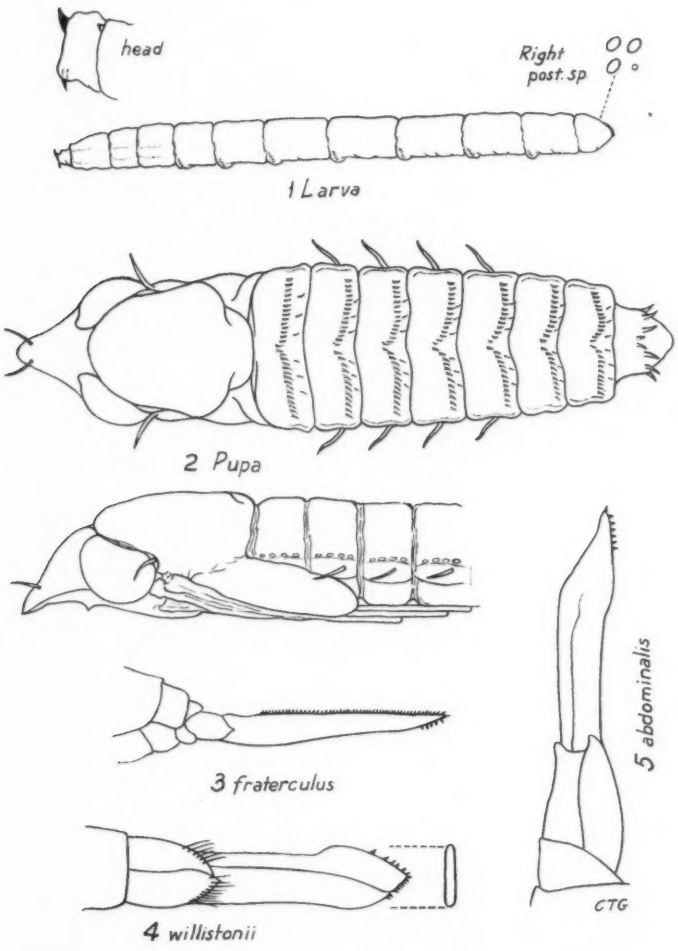
The larva makes small blotch or blister-like mines in the blades of *Scirpus acutus.*

Pupa. Pale cream colored with 8 abdominal segments of about equal length. Head capsule pointed, directed downward; on its dorsum, near its apex are 2 large, pale bristle--like projections; eyes large. Thorax slightly longer than wide with a large, spine-like projection on each side located near the posterior edge of the eye capsule. Abdomen with 8 segments; first 7 segments each with a row of spines, arched forward at the center, located near the posterior edge of each segment; posterior to these spines are 6 dark bristles, 3 each side of the dorso-central line. These 7 segments each have 4 small, elliptical areas on each side (spiracles); segments 2 to 5 have a large spine-like projection on each side, slightly posterior to the middle; last segment about as broad as long, tapering slightly at its apex; 2 small, pointed spines located dorso-centrally and on each side, slightly posterior to this pair are 3 larger spines, all pointing backward.

Pupa—7 mm. long and 1.5 mm. in diameter.

Two adults labeled IX. 2. 1943.

Reared from *Scirpus acutus* collected at Experimental Pond No. 2, Patuxent Research Wildlife Refuge, Prince George's County, Maryland, U. S. Dept. of the Interior.



1. Larva of *Thrypticus fraterculus* (Wheeler). 2. Pupa of *Thrypticus fraterculus* (Wheeler). 3. Ovipositor of *Thrypticus fraterculus* (Wheeler). 4. Ovipositor of *Thrypticus willistonii* (Wheeler). 5. Ovipositor of *Thrypticus abdominalis* (Say).

Collected and reared by Mr. Francis Uhler of this laboratory. Adults, larvae and pupae were submitted by Mr. Robert T. Mitchell, of this laboratory, to Charles T. Greene, for identification.

Comparison of Ovipositors

All of the ovipositors shown are pale yellow, with a narrow tinge of black, here and there, along their edges; they are all sclerotized, thin and blade-like, for piercing and are retractile.

T. fraterculus (Wheeler) Fig. 3

Ovipositor very narrow, tapering to a point at its apex; numerous short, pointed, black, spine-like teeth along the upper edge and 5 teeth on the lower apical edge.

Length: about 2 mm., width very narrow.

T. willistonii (Wheeler) Fig. 4

Ovipositor higher with the apical end broader and tapering to the apex where there are several black, sharp tooth-like spines above and below.

Length: about 1.75 mm.

T. abdominalis (Say) Fig. 5

Ovipositor nearly as high as the previous species with the apical end directed slightly obliquely downward to a point; 6 sharp tooth-like, black spines on the lower edge near the apical end.

Length: about 2.25 mm.

References

Brauer, F. 1883. Die Zweiflügler des Kaiserl. Museums. XIVII, Pt. III, p. 44, pl. IV, figs. 72–75.

Wheeler, W. M. 1897. Proc. Calif. Acad. Sci. 1, p. 145, Pl. IV, fig. 14.

Johannsen, O. A., and C. R. Crosby. 1913. Psyche 20, pp. 164–166, figs. 1–4.

Greene, C. T. 1923. Proc. Ent. Soc. Wash. 25, pp. 166–69, Pl. 5, figs. 1–3, a-b.

Distributional Notes on Eutricharea, a Palearctic Subgenus of Megachile, Which Has Become Established in the United States (Hymenoptera: Megachilidae)

By P. D. Hurd, Jr., University of California, Berkeley

In problems of biogeography it is particularly instructive to have on record distributional information relating to the establishment and dispersal of Palearctic species in the New World. The suspected occurrence in the Nearctic region of *Eutricharea,* a subgenus of the leaf cutting bee genus *Megachile,* was first mentioned by Mitchell [1] (1934: 304). At that time, he believed the subgenus had not become established in the Nearctic area, though he had seen several specimens which were apparently collected in the United States. Since this material was without sufficiently conclusive data, he regarded the specimens as representatives of introduced species which had failed to become established. In this connection, Professor Mitchell remarked that the nesting habits of the group (in hollow stems and twigs) apparently made possible their wide dissemination over the earth through the channels of commerce.

In 1937, Professor Mitchell [2] identified a specimen collected by P. H. Timberlake at Rosemont, Virginia, as *Megachile* (*Eutricharea*) *apicalis* (Spinola) and stated (p. 416) that the subgenus was present on the continent "by an introduced and apparently not overly successful species." Five additional records (2 ♂♂, 3 ♀♀) of *M. apicalis* (including the synonym, *M. virginiana*) are cited by him. These specimens are without specific locality data, but show that the species had been taken under natural conditions in Virginia, New Jersey (?), and Canada. Professor Mitchell further states (p. 417) that the two males recorded as *M. apicalis* may be *M. rotundata* (Fabricius), since the males of *Eutricharea* are more difficult to identify than the females.

[1] Mitchell, T. B. 1934. Trans. Amer. Ent. Soc. 59: 295–361.
[2] Mitchell, T. B. 1937. Trans. Amer. Ent. Soc. 63: 381–426.

Krombein [3] (1948: 14) has reported the capture of two female specimens of *M. rotundata* in the Washington metropolitan area. One specimen was taken in an office of the U. S. National Museum. The other was found in a garden at Arlington, Virginia, apparently causing damage.

In a recent paper, Daly [4] (1952) has enumerated the distributional and floral records for specimens of *M. rotundata* which were collected in Kansas, Missouri and Texas. Of particular significance are the dates of capture which cover the years 1948–1951 and the numbers of individuals (25) reported upon. These data provide quite conclusive evidence that the species has become established in the Great Plains region of the United States. Floral visitations by this species are recorded for representatives of four plant families (Labiatae, Lythraceae, Plumbagenaceae and Scrophulariaceae), and of the seven plant species visited four, according to Daly, are cultivated plants of European origin.

With this information in mind, it is interesting to speculate on the recent captures of two species belonging to the subgenus *Eutricharea* in California. As will be noted in the accompanying list of records, all of the California specimens have been taken during the last four or five years, and from a number of well separated localities within the State. The floral records include representatives of four plant families (Compositae, 3; Euphorbiaceae, 1; Leguminosae, 1; Polygonaceae, 1). Of the six plant species visited by the bees, three (*Cosmos* sp., *Medicago sativa, Polygonum aubertii*) are introduced into this country.

Megachile (Eutricharea) argentata (Fabricius)

Fresno Co.: Raisin City, ♂, X–15–51, on *Centromadia pungens* (P. D. Hurd, Jr.). Riverside Co.: Riverside, ♀, IX–30–49, on *Heliotropium occulatum* (P. H. Timberlake). San Joaquin Co.: Tracy, ♂, VI–21–49, on *Medicago sativa* (R. F. Smith).

[3] Krombein, K. V. 1948. Proc. Ent. Soc. Wash. 50: 14.
[4] Daly, H. V. 1952. Ent. News 63: 210–211.

Megachile (Eutricharea) rotundata (Fabricius)

FRESNO Co.: Raisin City, ♀, X–15–51, on *Centromadia pungens* (P. D. Hurd, Jr.), 6 ♀♀, same data (R. F. Smith). SACRAMENTO Co.: Sacramento, ♂♀, V–13–51 (H. F. Robinson). SOLANO Co.: Vallejo, ♀, X–1–49, on *Cosmos* (J. N. Simons). TEHAMA Co.: Vina, ♂, IX–22–51, on *Solidago* (E. I. Schlinger). TULARE Co.: Visalia, ♀, VI–21–51, on *Euphorbia* (E. I. Schlinger). YOLO Co.: Davis, ♀, V–2–51 (R. C. Bechtel); ♀, VII–28–51, on *Euphorbia* (E. I. Schlinger); ♂, VIII–11–51, on *Euphorbia* (E. I. Schlinger); ♂, VIII–15–51, on *Euphorbia* (E. I. Schlinger); ♂, IX–13–51, on *Polygonum aubertii* (A. T. McClay); ♂, X–2–51, on *Polygonum aubertii* (A. T. McClay); ♂, V–30–52 (A. T. McClay); ♂, VII–2–52 (E. I. Schlinger); 2 ♂, VII–25–52 (A. T. McClay and E. I. Schlinger); ♂, VIII–6–52 (A. T. McClay); 4 ♂, VIII–23–52 (E. I. Schlinger); ♀, VIII–26–52 (A. T. McClay); ♀, VIII–30–52 (A. T. McClay).

It seems reasonable to assume that the subgenus *Eutricharea* has become successfully established in California. The introductions of the two species, *Megachile argentata* and *M. rotundata,* probably occurred as a consequence of increased commercial activities growing out of World War II.

It is unfortunate that we do not possess a sufficient knowledge concerning the habits of our native bees for without such information it is virtually impossible to evaluate properly the interspecific influences arising as a consequence of the establishment of the subgenus *Eutricharea* in California.

In the collection of P. H. Timberlake is a female of *M. rotundata* which was collected at Menges Mills, Pennsylvania, on June 23, 1948, at flowers of *Cichorium intybus.* This record suggests that *rotundata* is apparently widely distributed over the Atlantic seaboard.

At the present writing, three Old World species of *Eutricharea,* a subgenus of the leaf-cutting bee genus *Megachile,* appear to be established within the United States, being found on the Atlantic seaboard, the Great Plain States, and in California. Their introduction must certainly have occurred as a direct consequence of world commerce.

I am indebted to Professor T. B. Mitchell of the University of North Carolina for confirming the identifications of the California specimens.

Culiseta inornata Attacking Man (Diptera)

By WILLIAM F. RAPP, JR.[1]

Many students of mosquitoes state that *Culiseta inornata* (Williston) never or seldom bites man and that the species is principally an animal feeder. Dyar[2] (1922: 29) stated: "The adult (*C. inornata*) is not troublesome, probably attacking by preference the larger mammals." Matheson[3] (1944: 226) stated: "They (*C. inornata*) are said seldom to attack man though the writer was frequently bitten by them while collecting in northern Michigan." More recently Ross[4] (1947: 39) stated that in Illinois: "In the early spring the overwintered females bite ferociously, but during the summer this species does not seem to constitute much of a pest even in those regions where it is abundant." Thus, it can readily be seen that the statement that *C. inornata* never bites man has already been disputed. To further substantiate the claim that it does bite man, the author herein reports some specific instances from Nebraska.

Tate and Gates[5] (1944: 7) as a result of their work during the mosquito seasons in 1942 and 1943 found *C. inornata* to be the third most abundant species in Nebraska and to represent 7% of their light trap catch for two years. However, the author in conducting a mosquito survey of the Missouri River Valley of Nebraska during 1952 found *C. inornata* to be of minor importance. Furthermore, it was found only in the spring and fall; no specimens were taken during July and August.

From June 1 to 3, 1953, Leslie B. Beadle and the author conducted a survey along the Missouri River and on three nights made human biting collections. As a result of these collections they were able to take specimens of *C. inornata* biting man.

[1] Entomologist, Nebraska State Department of Health, Division of Sanitation, Lincoln, Nebraska.

[2] DYAR, H. G. 1922. U. S. Nat. Mus. Proc. 62: 1.

[3] MATHESON, R. 1944. Handbook of the Mosquitoes of North America. Ithaca, N. Y.

[4] ROSS, H. H. 1947. Bull., Nat. Hist. Surv. 24.

[5] TATE, H. D. and D. B. GATES. 1944. Univ. Nebraska College of Agric. Res. Bull. 133.

At Ponca State Park, a deciduous wooded area three miles north of Ponca, Dixon County, Nebraska, on June 1, 1953 between 7:19 and 7:34 P.M. one female specimen of *C. inornata* was taken. On June 2, 1953, at Fontenelle Forest (Child's Point), Sarpy County, Nebraska between 8 and 9 P.M. three female *C. inornata* were taken while biting man.

From information gained by larval surveys and light trap collections it is evident that this species is abundant in Nebraska during the months of May and June. However, biting collections indicate that while *C. inornata* does bite man, it seems to prefer some other host.

Recovery of Japanese Beetle Parasites Introduced in May 1940

Nematode parasites introduced into a locality in May, 1940, for control of the Japanese beetle were recovered in the vicinity on June 11, 1953.

The nematode *Neoaplectana glaseri* was distributed by the New Jersey Department of Agriculture during the period 1939–1942, with the establishment of surface treated plots at three and one-half mile intervals throughout the sections of the state then infested by the Japanese beetle. Experimental work proved that the parasite spreads through migration of the nematodes through the soil and by the flight of infected adult beetles.

On June 11, during the collection of 200 Japanese beetle larvae for experimental work, dead larvae were found having the appearance typical of nematode-infected larvae. Laboratory examination revealed *Neoaplectana glaseri* larvae in twelve of nineteen larvae submitted.

The plot of turf to which the parasites had been applied on this property was approximately one-quarter mile from the location where the parasitized grubs were found.

This parasite has maintained itself under field conditions for thirteen years and is still exerting an influence on the host population.—HAROLD B. GIRTH, N. J. Department of Agriculture, Trenton, New Jersey.

New Southeastern Records for Zorotypus Hubbardi Zoraptera [1]

By T. P. COPELAND, The University of Tennessee, Knoxville

New state and county records for the small, relatively unknown order Zoraptera were obtained during summer collecting trips in Tennessee, Arkansas, Louisiana, Mississippi, and Kentucky.

Zorotypus hubbardi Caudell was taken in Pearl River and Lamar Counties, Mississippi, on Sept. 1, 1953. The collection consisted of 15 apeterous females, 20 apterous males, and 6 nymphs with wing pads. Inasmuch as Zoraptera are found in the adjacent states of Alabama, Tennessee, Arkansas, and Louisiana, it is probable that the order has a wide distribution within the state. No previous records are known from Mississippi, however.

Collections were made on Sept. 17, 1953, in three southeastern Kentucky counties: Leslie, Bell, and Harlan. Three deälate females, 35 apterous males, 31 apterous females, and 8 nymphs with wing pads were obtained. This is also a new state record for the order.

New county or parish records for Arkansas, Tennessee, and Louisiana are as follows: for Arkansas—Drew, Jefferson, Chicot, and Hot Springs Counties, 32 apterous males, 21 apterous females, and 4 nymphs with wing pads, Sept. 7–10, 1953; for Tennessee—Knox, Sullivan, Carter, Chester, Perry, Putnam, and Hardman Counties, 51 apterous females, 68 apterous males, and 10 nymphs with wing pads, Sept. 13–16, 1953; for Louisiana—Rapides and Caldwell Parishes, 18 apterous females and 15 apterous males, Sept. 5, 1953.

All collections were made by means of an aspirator. In Knox County, Tennessee, Zoraptera were taken just beneath the bark of a decaying log. All other collections were taken beneath slabs of wood or bark partially buried in old sawdust piles. The single collection from beneath bark was the author's first attempt

[1] Contribution No. 83 from the Department of Zoology and Entomology, University of Tennessee.

to collect from this habitat, and should not indicate an unusual environment. Gurney,[2] Valentine and Wilson,[3] and Deboutteville [4] report collections from within decaying logs and stumps, beneath bark on logs, and from sphagnum moss. Of 43 sawdust heaps examined, seventy-four percent contained Zoraptera.

A Preoccupied Name in the Miridae (Hemiptera)

For the past quarter-century the name *Eustictus filicornis* (Walker, 1872) has been used for the species that was formerly known as *E. grossus* (Uhler, 1887). The synonymy of these two names was first indicated in 1926 by Blatchley in a footnote, inserted under *E. grossus,* at page 884 of his "Heteroptera of Eastern North America."

Walker described the species under the genus *Capsus,* and his original combination is thus a primary homonym of *Capsus filicornis* Fabricius, 1803. The name *Eustictus grossus* (Uhler) must therefore be restored as the proper one for this species.—R. F. Hussey, Univ. of Florida, Gainesville.

New Appointment

Mr. Harold J. Grant, Jr., has been appointed Assistant Curator of the Department of Insects of the Academy of Natural Sciences of Philadelphia as of February 1, 1954. Mr. Grant is a graduate of the University of Colorado, from which he has also received his degree of Master of Science. In addition he has had valuable field experience in our Western States. He will be associated with the Curator of the Department, Mr. James A. G. Rehn, in the preparation of the monograph of the Orthoptera of North America, which has been inagurated through the support of the National Science Foundation. In this specific project, work on which is now actively progressing, Mr. Grant will be known as the Junior Investigator, assisting and collaborating with Mr. Rehn, the Principal Investigator.

[2] Gurney, A. B. 1938. Proc. Ent. Soc. Wash. 40: 57–87.

[3] Valentine, B. D., and O. E. Wilson. 1949. Ent. News 60: 180–181.

[4] Deboutteville, C. D. 1948. Rev. Ent. (Rio de Janeiro) 19: 347–352.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

Alfred, D. M. & D. E. Beck.—Mite fauna of woodrat nests in Utah. [Proc. Utah Acad. Sci.] 30: 53–6. **Augustson, G. F. & S. F. Wood.**—Notes on California mammal ectoparasites from the Sierra Nevada foothills of Madera County. [145] 52: 48–56. **Beck, D. E.**—Arthropod consortes found in the nests of Neotoma cinerea acraia (Ord) and Neotoma lepida lepida Thomas. [Utah Acad. Sci., Proc.] 30: 43–52. —A study of some consortes found at a nesting site of the northern cliff swallow, Petrochelidon albifrons albifrons (Raf.) (Fleas, mites & bugs.) [Utah Acad. Sci., Proc.] 30: 39–42. **Beckel, W. E.**—Preparing mosquito eggs for embryological study. [92] 13: 235–37. **Burnett, T.**—Effects of temperature and parasite density on the rate of increase of an insect parasite. [50] 34: 322–28. **Burton, G. J.**—Photomicrography of mosquitoes with the single-lens reflex camera. [92] 13: 248–52, ill. **Cloudsley-Thompson, J. L.**—The ecological significance of diurnal rhythms in terrestrial arthropods. [Science Progress] 42: 46–52, 1954. **Crane, J. & H. Fleming.**—Construction and operation of butterfly insectaries in the tropics. [154] 38: 161–72, ill. **Mayr, E., E. G. Linsley & R. L. Usinger.**—Methods and principles of systematic zoology. McGraw-Hill, N. Y., Toronton & Lond., 328 pp. (Review by C. D. Michener [111] 29: 228.) **Moore, B. P.**—Dilute acetic acid as a relaxing fluid. [60] ser. 4, v. 89: 277. **Pennak, R. W.**—Fresh-water invertebrates of the United States. Ronald Press, N. Y., 769 pp., 470 figs. $14.00. (Review by R. L.

Usinger [111] 29: 221–22.) **Ross, E. S.**—Insects close up. Univ. Calif. press, Berkeley & Los Angeles. $1.50 (Cloth $2.25). 81 pp., 125 figs. (part col.). (Review by J. D. Lattin [111] 29: 222.) **Schwenke, W.**—Biozönotische betrachtungen zur biologischen bekämpfung von schadinsekten. [28] 3: 529–36. **Thevenard, P.**—Emploi de la radio-cinématographie pour la recherche biologique, et application de cette méthode à l'étude de la métamorphose chez la mouche. [2] 237: 1791–93. **Veiga Ferreira, G. da.**—Entomological exhibition, its influence on research. [South Afr. J. Sci.] 50: 140–42. **Woodroffe, G. E.**—An ecological study of the insects and mites in the nests of certain birds in Britain. [40] 44: 739–72, ill.

BIOGRAPHIES, OBITUARIES—Bishopp, Fred Corry, 1884– .—Portrait. [92] 13: 260, 262. **Börner, Carl,** 1880–1953. Obituary by J. P. Doncaster. [60] 4th ser. v. 89: 287. **Comstock, Anna Botsford,** 1854–1930.—Autobiography with port. (See Comstock, John Henry.) **Comstock, John Henry,** 1849–1931.—The Comstocks of Cornell: John Henry Comstock and Anna Botsford Comstock, an autobiography by Anna Botsford Comstock. Ed. by G. W. Herrick & R. G. Smith. Ithaca, N. Y., Comstock Publ. Co., 1953, 286 pp., ill. incl. portraits. $4.50. **Eager, George,** 1885–1953.—Obituary by George Powers. [92] 13: 261–62. **Gutierrez, Ramon,** 1917–1953. Obituary. [Agr. Tec. Chile] 13: 86. **Marchand, M. S.**—Nécrologie, by M. Cl. Herbulot. [138] 58: 137. **Prell, Heinrich,** 1888– . Commemorating his 65th birthday. [28] 3: 435–36, port. **Tooke, Frank G. C.**—Obituary, with portrait, by B. S. [J. Ent. Soc. So. Afr.] 16: 232–33.

ANATOMY, PHYSIOLOGY, MEDICAL—Becker, G.—Beobachtungen über eier und eiablage einiger holzfressender cerambyciden. [28] 3: 504–18, ill. **Burchfield, H. P. & others.**—Improved methods for rearing larvae of Aedes aegypti (L.) for use in insecticide bioassay. [Contr. Boyce Thompson Inst.] 17: 317–31. **Burchfield, H. P., J. D. Hilchey & E. E. Storrs.**—An objective method for insecticide bioassay based on photomigration of mosquito larvae. [Contr. Boyce Thompson Inst.] 17: 57–86, 1952. **Chovnick, A.**—The effect of the lozenge pseudoalleles on the development of tarsal claws in Drosophila melanogaster. [Genetics] 38: 659. (Abstract.) **Epling, C., D. F. Mitchell & R. H. T. Mattoni.**—On the role of inversions in wild populations of Drosophila pseudoobscura. [62] 7: 342–65, ill.

Fung, S.-T. C. & J. W. Gowen.—Sex development in Drosophila melanogaster as influenced by a gene in the third chromosome. [Genetics] 38: 662–3. (Abstract.) **Ghelelovitch, S.**—Au sujet de l'action de la temperature sur le développement d'une tumeur héréditaire chez la drosophile (Drosophila melanogaster Meig.). [2] 237: 1574–76. **Goetsch, W.**—Beschleunigung der entwicklungsgeschwindigkeit von Drosophila um 20 bis 30 prozent. [100] 40: 584–85. **Harnisch, O.**—Die gasaufnahme der larve von Sialis lutaria L. [159] 64: 496–514. **Heidenthal, G.**—A comparison of X-ray induced dominant and recessive lethals in first meiotic metaphase eggs and in sperm of Habrobracon. [Genetics] 38: 668. (Abstract.) **Herskowitz, I. H. & H. J. Muller.**—Evidence against the healing of X-ray breakages in chromosomes of female Drosophila melanogaster. [Genetics] 38: 669. (Abstract.) **Hilchey, J. D.**—Studies on the qualitative requirements of Blatella germanica (L.) for amino acids under aseptic conditions. [Contr. Boyce Thompson Inst.] 17: 203–19. **& R. L. Patton.**—Effects of irregular sex ratios on growth response data from nutritional assays upon Blatella germanica (L.). [Contrib. Boyce Thompson Inst.] 16: 455–59, 1952. **Hurpin, B.**—Relation entre la diapause et l'ovogenèse chez Melolontha melolontha L. (Scarabeidae). [2] 237: 1789–91. **Kaplan, W. D.**—The influence of minutes upon somatic crossing over in Drosophila melanogaster. [Genetics] 38: 630–51. **Koenig, M.**—Ueber den stickstoff und den aminosäuregehalt des bienenblutes. [100] 40: 583. **Lewis, C. T.**—Contact chemoreceptors of blowfly tarsi. [98] 173: 130–31, ill., 1954. **Long, D. B.**—Effects of population density on larvae of Lepidoptera. [126] 104: 543–84, ill. **Manning, F. J.**—The sex chromosome of the honey bee. [62] 7: 388–90, ill. **Matthée, J. J.**—The production of diapause eggs by incipient swarms of Locustana pardalina (Walk.). [J. Ent. Soc. Co. Afr.] 16: 132–38. **Merrell, D. J.**—Selective mating as a cause of gene frequency changes in laboratory populations of Drosophila melanogaster. [62] 7: 287–96. **Mittelstaedt, H. & E. von Holst.**—Reafferenzprinzip und optomotorik. [160] 151: 237–52. **Ohnesorge, B.**—Der einfluss von geruchs- und geschmacksstoffen auf die wahl der frasspflanzen beim braunen rüsselkäfer Hylobius abietis L. [28] 3: 437–68. **Richards, A. G., M. B. Clausen & M. N. Smith.**—Studies on arthropod cuticle. X. The asymmetrical penetration of water. [75] 42: 395–413. **Rizki, M. T. M. & C. G. Davis, Jr.**—Light as an ecological

determinant of interspecific competition between Drosophila willistoni and Drosophila melanogaster. [15] 87: 389–92. **Ruppel, H.**—Physiologische untersuchungen über die bedeutung des ventraltubus und die atmung der Collembola. [159] 64: 429–69. **St. Amand, G. S. & S. R. Tipton.**—The separation of neuroblasts and other cells from grasshopper embryos. [Science] 119: 93–4, 1954. **St. Amand, W.**—Differential frequency of acentric fragments induced in grasshopper neuroblasts by X-irradiation at known mitotic stages. [Genetics] 38: 688. (Abstract.) **Schenk, G. O. & R. Wirtz.**—Eine weitere synthese des cantharidins. [100] 40: 581. **Stallworthy, W. B. & R. H. Buker.**—Respiration of Habrobracon juglandis (Ashmead) for various sex types. [Genetics] 38: 694–95. (Abstract.) **Takami, T.**—Movement of yolk cells in the silkworm (Bombyx mori L.). [Science] 119: 161–62, ill., 1954. **Tinbergen, N.**—The evolution of mating behavior patterns. (Drosophila.) [62] 7: 391. **Wallace, B.**—On coadaptation in Drosophila. [15] 87: 343–58. **Whiting, A. R.**—Frequencies of dominant and recessive lethals induced in Habrobracon eggs by X-rays in air and in nitrogen. [Genetics] 38: 701. (Abstract.) **Wilbert, H.**—Normales und experimentell beeinflusstes auftreten von männchen und gynandromorphen der stabheuschrecke. [159] 64: 470–95.

ARACHNIDA AND MYRIOPODA—Baker, E. W. & A. E. Pritchard.—A guide to the spider mites of cotton. [70] 22: 203–34, ill. (*k). **Camin, J. H.**—Metagynellidae, a new family of Uropodine mite, with the description of Metagynella parvula, a new species from tree holes. [Bull. Chicago Acad. Sci.] 9: 391–409, ill. —A revision of the cohort Trachytina Tragardh, 1938, with the description of Dyscritaspis whartoni, a new genus and species of polyaspid mite from tree holes. [Bull. Chicago Acad. Sci.] 9: 335–85, ill. **Cloudsley-Thompson, J. L.**—(See General.) **Cook, D. R.**—Marshallothyas, a new genus belonging to the subfamily Thyasinae (Acarina, Hydracarina). [56] 55: 305–14, ill. **Grandjean, F.**—La coalescence fémorogénuale chez Fusacarus (Acarina). [Bull. Mus. Nat. d'Hist. Nat., Paris, 2d ser.] 25: 387–94, ill. **Gunther, C. E. M.**—Factors worth considering when making measurements of trombiculid larvae. [Proc. Linn. Soc. New So. Wales] 78: 35–37, ill. **Loomis, E. C.**—A note on Otobius lagophilus (Acarina: Argasidae). [111] 29: 198. **Loomis, H. F.**—New millipeds of the western states and Lower California. [152] 43:

417–22. **Malkin, B.**—New records of Arachnida from Alaska (Araneida, Phalangida). [111] 29: 205–06. **Muma, M. H., H. Holzberg & R. M. Pratt.**—Eutetranychus banksi (McG.) recently found on citrus in Florida (Acarina: Tetranychidae). [64] 36: 141–44, ill. **Pschorn-Walcher, H.**—Zur biologie und systematik terricoler milben (II). (Oribatidae.) [34] 4: 327–32. **Wiley, A. J.**—Common ticks on livestock in Kenya. [East African Agr. J.] 19: 5–10, ill. **Woodroffe, G. E.**—Mites. (See General.)

SMALLER ORDERS—Augustson, G. F.—The flea genus Meringis in California with the description of M. californicus n. sp., and M. deserti n. sp. (Siphonaptera). [145] 52: 110–18, ill. —Some new fleas (Siphonaptera) of western United States. [145] 52: 119–26, ill. **Beatty, G. H.**—New England records of Ululodes Currie (Neuroptera: Ascalaphidae). [115] 60: 114. **Berner, L.**—New mayfly records from Florida and a description of a new species. [64] 36: 145–49, ill. **Carriker, M. A., Jr.**—Neotropical miscellany no. VI. New genus and species of Mallophaga. [64] 36: 151–60, ill. **Clay, T.**—Revision of the genera of Mallophaga. I. The Rallicola-complex. [156] 123: 563–87, ill. **Condé, B.**—Le diploure Campodea monspessulana n. sp., hote de la grégarine Lepismatophila campodeae Tuzet, Manier et Ormières. (Thysanura.) [Bull. Mus. Nat. d'Hist. Nat., Paris, 2d ser.] 25: 406–09, ill. (k). **Gupta, S. D.**—Ecological studies of termites. Part I. Population of the mound-building termite, Odontotermes obesus (Rambur). (Isoptera: Termitidae.) [Proc. Nat. Inst. Sci. India] 19: 697–704. —Part II. Occurrence of deserted royal chambers, the directional position of the queen, and the size of the queen with respect to mound-size. *Ibid.*, p. 705–12, ill. **Harnisch, O.**—Megaloptera. (See Anatomy.) **Judd, W. W.**—Larval mites of the genus Eutrombidium attached to a Carolina locust. [115] 60: 124–25, ill. **Moore, B. P.**—A curious instance of attempted cross-pairing in the Zygoptera (Odon.). [60] 4th ser. v. 89: 277. **Riek, E. F.**—Fossil mecopteroid insects from the Upper Permian of New South Wales. [Records, Austr. Mus.] 23: 55–87, ill. **Ruppel, H.**—Collembola. (See Anatomy.) **Schiemenz, H.**—Ein idealer fall von gynandromorphismus bei Aeschna cyanea Müll. (Odonata). [28] 3: 563–69, ill. **Stenmark, A.**—Termites. (See Coleoptera.) **Timmermann, G.**—A revision of the genus Carduiceps Clay & Meinertzhagen, 1939 (Mallophaga). [19] ser. 12, v. 7: 40–48, ill., 1954. **Vaillant, F.**—Tinodes algirica MacLachlan, the hygropetric larvae of

the Tinodes (Trichoptera). [19] ser. 12, v. 7: 58–62, ill., 1954. **Westfall, M. J., Jr.**—Notes on Florida Odonata, including additions to the state list. [64] 36: 165–73.

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55–8, ill., 1954. **McConnell, H. S.**—A classification of the coccid family Aclerdidae. [Bull. Maryland Agr. Expt. Sta.] A-75 (technical), June 1953, corrected date of issue Feb. 1954, ill. **Ruppel, R. F. & D. M. DeLong.**—Two new unique species of Alconeura from Mexico (Cicadellidae). [106] 54: 13–14, ill., 1954. **Ryckman, R. E.**—First report of Paratriatoma hirsuta Barber from Nevada and additional collections from Arizona and California (Reduviidae). [111] 29: 199–200. **Sailer, R. I.**—The new-world distribution of Alydus calcaratus (L.) with comment on the disposal of the name Coriscus Schrank, 1796. (Coreidae.) [56] 55: 315–18, ill. **Simons, J. N.**—New California cicadas with taxonomic notes on other species (Cicadidae). [111] 29: 191–98. **Wood, S. F.**—Conenose bug (Triatoma) annoyance and Trypanosoma cruzi in southwestern National Monuments. [145] 52: 57–60.

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eral.) **Belkin, J. N.**—Corrected interpretations of some elements of the abdominal chaetotaxy of the mosquito larva and pupa (Culicidae). [56] 55: 318–24, ill. **Campos S. L.**—Notas sobre taquinidos Chilenos I. [Agr. Tec. Chile] 13: 24–31. **Dimond, J. B. & W. G. Hart.**—Notes on the blackflies (Simuliidae) of Rhode Island. [92] 13: 238–42. **Hoyt, C. P.**—Deformed abdominal tergites in Musca domestica Linnaeus (Muscidae). [111] 29: 208–10, ill. **Hubert, A. A.**—Another species of Rhamphomyia predaceous on mosquitoes (Empididae). [111] 29: 190. —The biology of Paradixa californica (Dixidae). [111] 29: 181–90, ill. **Jones, J. C.**—Some biometrical constants for Anopheles quadrimaculatus Say larvae in relation to age within stadia. [92] 13: 243–47, ill. **Kerrich, G. J.**—Report on Encyrtidae associated with mealybugs on cacao in Trinidad, and on some other species related thereto. [40] 44: 789–810, ill. **Khan, N. H.**—Effects of weather conditions on horsefly populations. [50] 34: 414–15. **Pechuman, L. L.** —A new neotropical Chrysops (Tabanidae). [115] 60: 115–18, ill. **Rageau, J., J.-P. Adam & E. Rivola.**—Etude préliminaire sur la biologie d'Anopheles gambiae, Giles 1902 dans les régions forestières du Sud-Cameroun. [17] 28: 425–49, ill. **Rees, D. M. & F. D. Arnold.**—An outbreak of blowflies in Salt Lake County in 1952. [Proc. Utah Acad. Sci.] 30: 60–2. **Rees, D. M. & B. V. Peterson.**—The black flies (Simuliidae) in the Canyons near Salt Lake City, Utah. [Proc. Utah Acad. Sci.] 30: 57–9. **Rings, R. W. & E. A. Richmond.**—Mosquito survey of Horn Island, Mississippi. [92] 13: 252–55. **Sabrosky, C. W.**—Taxonomy and host relations of the tribe Ormiini in the western hemisphere, II. (Larvaevoridae). [56] 55: 289–305 (k). **Sailer, R. I.**—The blackfly problem in Alaska. [92] 13: 232–35. **Steyskal, G. C.**—A new melissomimetic fly of the genus Microdon (Syrphidae). [89] no. 551, 4 pp., ill. **Sturtevant, A. H. & M. R. Wheeler.**—Synopses of nearctic Ephydridae. [9] 79: 151–257, 1954 (k). **Weems, H. V., Jr.**—Natural enemies and insecticides that are detrimental to beneficial Syrphidae. [106] 54: 45–54, 1954. **Yates, W. W.**—Notes on the ecology of Culiseta mosquitoes found in the Pacific Northwest. [92] 13: 229–32.

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neue Pepsis-arten (Sphecoidea) Pompilidae, olim Psammocharidae auct. mit einem anhang: Der stachelapparat der spinnenfangenden raubwespen. [Nova Acta Leopold. n. f.] 15, no. 109, p. 309–414, ill., 1952. **Kraft, K.**—The ants of Itasca State Park, Minnesota. [Bull. Univ. N. Dakota, Abstracts of doctoral dissertations] p. 27–8. **Michener, C. D.**—The biology of a leafcutter bee (Megachile brevis) and its associates. [83] 35: 1659–1748, ill. **Rees, D. M. & J. W. Kliewer.**—Notes on the biology and control of wasps in Salt Lake City and vicinity. [Proc. Utah Acad. Sci.] 30: 114–15. (Abstract.) **Santis, L. de.**—Adiciones a la fauna Argentina de afelinidos. II. (Chalcidoidea). [Revista, Fac. de Agr., Buenos Aires, ser. 3] 29: 73–84, ill. **Simmonds, F. J.**—Observations on the biology and mass-breeding of Spalangia drosophilae Ashm. (Spalangiidae), a parasite of the frit-fly, Oscinella frit (L.). [40] 44: 773–78. **Stenmark, A.**—Formicidae. (See Coleoptera.) **Tilden, J. W.**—The digging and provisioning behavior of Ammophila saeva Smith (Sphecidae). [111] 29: 211–18. **Way, M. J.**—The relationship between certain ant species with particular reference to biological control of the coreid, Theraptus sp. [40] 44: 669–91, ill.

Reviews

THE ODONATA OF CANADA AND ALASKA. By Edmund M. Walker, Professor Emeritus of Zoology, University of Toronto, Honorary Curator of Zoology, Royal Ontario Museum of Zoology and Paleontology. Vol. One, Part I: General, Part II: The Zygoptera—Damselflies. University of Toronto Press: 1953. 8 vo. Pp. xii, 292, 44 plates of many line engravings numbered separately for each plate, the plates printed throughout the text. Price, $13.00.

Part I deals with A, The external structure of the order Odonata, pp. 3–5, The external features of the adult dragonfly, pp. 5–23, pls. 1–4, The external features of the full-grown nymph, pp. 23–31, pls. 5 & 6, and B, Life history and habits of adults, pp. 32–45, pl. 7, Developmental stages, pp. 45–52, Enemies of dragonflies, pp. 52–55, Parasites, pp. 55–57.

Part II is on the Zygoptera of Canada and Alaska, beginning with a key to the suborders of Odonata and a key to the families of Zygoptera, pp. 61–62, followed by a statement of the distri-

bution of the Zygoptera of Canada and Alaska, which are provisionally grouped as A, Austral or southern species (6), B, restricted eastern species (2), C, U. S. and Canadian provinces east of the Great Plains (18 spp.), D, Atlantic to Saskatchewan or foothills of the Rocky Mountains (5 spp.), E, Transcontinental species (10), F, British Columbia and western States, eastward to Saskatchewan and Manitoba (2 spp.), G, Species restricted in Canada to the interior, particularly the Great Plains (3), H, Southern British Columbia (5 spp.), pp. 62–65. The total is recognized as 51 species, "a number that is somewhat less than half the total number known from North America north of Mexico."

The systematic account of these Zygoptera occupies pp. 65–278, including keys to genera and species. Under each species are given descriptions of adult male and female and nymph, the habitat, range, distribution in Canada, and field notes. A selected bibliography, pp. 279–286, and an index, pp. 287–292, complete the volume.

The excellent account of the external structure of the Odonata is based on both the Zygoptera and the Anisoptera, as it is evidently designed to serve as an introduction both to this volume and to a later one on the Anisoptera.

Structural details and color patterns of both adult sexes and of nymphs are given for many species; thus the figures of the mesostigmal laminae of the females of *Argia, Enallagma, Coenagrion, Nehalennia, Ischnura, Chromagrion* and *Amphiagrion* are novelties for most of our North American species. The author tells us (preface, p. vii) that he has "collected and studied Odonata for more than fifty years in every province of Canada." As one result his field notes, mentioned above, are highly interesting to the students of these insects, describing the habitats, pairing and flight periods, with lists of numerous geographical localities in which each species has been observed. Nor are the data of other investigators neglected. Even though realizing that the bibliography "is in no sense a complete" one, we wish that Tillyard and Fraser's "Reclassification of the Order Odonata," in the Australian Zoologist, 1938–1940, had been included.

As the paper is not calendered, except for plate 8, the book is delightful reading. Our copy is bound in an attractive dark green buckram and weighs one pound, 6½ ounces. This book will be of great use to entomologists working on the fauna of the United States, in spite of the limitations suggested by its title. It is a pleasure to recommend it highly to entomologists and zoologists generally, wherever they are located.

PHILIP P. CALVERT.

THE COMSTOCKS OF CORNELL: John Henry Comstock and Anna Botsford Comstock, 1953. Comstock Publishing Associates, Ithaca, N. Y. Pp. xi, 286, 7 halftones. Price, $4.50.

This volume is more than the story of the lives of two people; in the telling it becomes an exposition of an admirable philosophy of living, and an account of a newly developing science in America. While it is called an autobiography, it is perhaps more about her husband than about Mrs. Comstock, though the lives of the two had a unity of aim and achievement seldom encountered.

John Henry Comstock taught the first entomology course given in an American university. He continued this teaching for 40 years, and among his students were most of the men who became early and important figures in the field. Another distinguished scientist said of him: "He has been probably the greatest teacher of natural history that America has known." These facts, coupled with the use of his books for many years as standard texts in the field, make it evident that his influence was greater than that of any other man in the development of American entomology.

From this account of the events of his life there gradually emerges the picture of a young man of great determination, integrity, and ability, and of much self-reliance. One wonders, had there been a G-I bill-of-rights, whether he would have taken advantage of it, and it seems quite certain that he would not have thumbed a ride. He said: "I have known lots of fellows who left college because of lack of money; but once when I tried to leave college, I did not have enough money to get out of town; so I stayed. . . ."

It is unusual that a man of Mr. Comstock's eventual accomplishments should have married a woman who was to make so large a place for herself in the world of science, art, and writing. Though never active in politics, she was named in 1923 by the League of Women Voters as one of the 12 greatest women of America.

This book, I feel sure, must be considered the final and definitive Comstock biography. It is a warm personal account of two good scientists who were also very fine people.

M. E. PHILLIPS.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

American Sarcophagidae—wanted for identification. H. R. Dodge, P.O. Box 185, Chamblee, Georgia.

German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel. Koenigsberg, Krs. Wetzlar 16, Germany.

For exchange—The periodic Cicada, T. septendecim. Desire Lepid., espec. Papil., Sphing. & Speyeria. Also Col., espec. Ceramb. & Lucan. John W. Morris, 2704 Genesee St., Syracuse 9, N. Y.

Cynipid and Itonidid galls—American species wanted; purchase or exchange for British species. Fresh or dried. D. Leatherdale, F.R.E.S., Old Woodstock, Oxford, England.

Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Wanted—Data on exact location of colonies of *Epibembex* (olim *Bembix*) (Hymenoptera), any species, any part of country, for biological studies. Howard E. Evans, Dept. Entomology, Cornell Univ., Ithaca, N. Y.

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